

What is claimed is:

1. A process for separating butenes and butanes by extractive distillation using a polar extractant by
 - 5 a) extractively distilling a stream comprising butenes and butanes using a polar extractant to obtain a top fraction comprising butanes and a bottom fraction comprising butenes and the polar extractant and
 - b) destillatively separating the bottom fraction from a) into a low boiler fraction which comprises the butenes and a high boiler fraction which comprises the polar
10 extractant,
which comprises
recycling the high boiler fraction from b) comprising the polar extractants into the extraction stage a).
- 15 2. The process as claimed in claim 1,
wherein
the distillative separation of stage b) is carried out at a pressure of from 0.5 to 5 bar.
3. The process as claimed in claim 1 or 2,
20 wherein
a portion of the low boiler fraction of stage b) is recycled into the extraction stage a).
4. The process as claimed in claim 3,
wherein
25 the recycle ratio of stage b) to stage a) is 0.01 – 0.5 kg/kg.
5. The process as claimed in either of claims 3 or 4,
wherein,
the portion of the low boiler fraction b) recycled into stage a) is compressed to the
30 working pressure of stage a).

6. The process as claimed in any of claims 1 to 5,

wherein,

some or all of the low boiler fraction of stage b) is separated in a second separating stage c) into a butene-containing fraction and a fraction comprising the polar extractant, and the fraction comprising the polar extractant is recycled into the distillative separation of stage b).

7. The process as claimed in claim 6,

wherein

the recycle ratio of stage c) to stage b) is 0.001 – 0.1 kg/kg.

8. The process as claimed in claim 6 or 7,

wherein

the second separating stage c) is effected by distillation at a pressure of 1 – 5 bar.

9. The process as claimed in claim 7 or 8,

wherein

the second separating stage c) is effected by cooling the low boiler fraction from stage b) to from -10 to +55°C.

10. The process as claimed in any of claims 1 to 9,

wherein

the polar extractant is used anhydrously or in a mixture with from 0.1 to 20% by weight of water.

11. The process as claimed in any of claims 1 to 10,

wherein

the polar extractant used is dimethylformamide, N-methylpyrrolidone, acetonitrile, furfural, N-formylmorpholine or dimethylacetamide.